

**Amendments to the Claims:**

This listing of claims will replace all prior versions, and listings, of claims in the application:

**Listing of Claims:**

**Claims 1-24 (canceled)**

1           **Claim 25 (new):**       A process for measuring  
2   three-dimensional objects in a three-dimensional  
3   environment, comprising the steps of:  
4           taking at least one image of said environment by at  
5   least one camera;  
6           detecting discontinuities of appearance in the image;  
7           relating said discontinuities with geometric contours,  
8   said contours having positions and shapes in the image  
9   which are defined by parameters including numerals;  
10          matching said geometric contours with said  
11   discontinuities by adjusting said parameters;  
12          relating said geometric contours with geometric  
13   objects in the three-dimensional environment, positions and  
14   shapes of said geometric objects in the environment being  
15   defined by parameters including numerals;  
16          estimating said positions and shapes of said geometric  
17   objects in the three-dimensional environment in computing  
18   geometric projections of said geometric objects onto said  
19   at least one image according to a match between said

20 projection and said geometric contours; and,  
21 creating a representation of the three-dimensional  
22 environment, said representation comprising said geometric  
23 objects, according to the parameters defining the positions  
24 and shapes of said geometric objects.

1 **Claim 26 (new):** The process according to claim 25,  
2 characterized in that the geometric contours include dots,  
3 straight lines, ellipses, and the objects include circles,  
4 cylinders, straight lines and dots.

1 **Claim 27 (new):** The process according to claim 26,  
2 characterized in that the parameters include plane  
3 Cartesian coordinates, angles and lengths.

1 **Claim 28 (new):** The process according to claim 25,  
2 characterized in that said at least one image is converted  
3 into an image of a potential function computed on pixels of  
4 said at least one image, the potential function giving  
5 extreme values at said discontinuities.

1 **Claim 29 (new):** The process according to claim 28,  
2 characterized in that the potential function includes a  
3 term taking account of areas with very low intensity of  
4 gray on the images.

1           **Claim 30 (new):** The process, according to claim 25,  
2           wherein said representation comprises a position of said at  
3           least one camera.

1           **Claim 31 (new):** The process according to claim 30,  
2           wherein said geometric projections are determined from the  
3           position of said camera and positions of said geometric  
4           objects in the representation.

1           **Claim 32 (new):** The process according to claim 25,  
2           wherein the representation initially comprises information  
3           on at least the positions and shapes of said geometric  
4           objects which is inputted manually or from a computer  
5           description file, and the representation is created in  
6           progressively amending said information so that the match  
7           between the projection of said geometric objects and said  
8           geometric contours of said at least one image is improved.

1           **Claim 33 (new):** The process according to claim 25,  
2           wherein a plurality of said images is taken, and said  
3           representation of the three dimensional environment is  
4           amended in repeating the process for each of said images.

1           **Claim 34 (new):** The process according to claim 33,  
2           wherein said representation of the three-dimensional  
3           environment is amended in amending the positions and shapes

4 of said geometric objects for each of said images.

1           **Claim 35 (new):** The process according to claim 33,  
2 wherein said representation of the three-dimensional  
3 environment is amended in including said geometric objects  
4 into said representation in repeating the process for  
5 different ones of said images.